

least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

10. (Amended) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with an enzyme encoded by [the] a DNA molecule [as claimed in any one of claims 1 to 6] comprising a nucleotide sequence having at least 60% homology with LcαE7, in which the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

11. (Amended) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with a cell [as claimed in claim 7 or claim 8] transformed with a DNA molecule comprising a nucleotide sequence having at least 60% homology with LcαE7, in which the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

Please add new claims 13-29.

13. (New) The enzyme according to claim 9, wherein said cell is a prokaryotic cell or an insect cell.

14. (New) The enzyme according to claim 9, wherein said DNA molecule has at least 80% homology with the DNA encoding Lc α E7.

15. (New) The enzyme according to claim 9, wherein said DNA molecule has at least 95% homology with the DNA encoding Lc α E7.

16. (New) The enzyme according to claim 9, wherein said DNA molecule has the nucleotide sequence of SEQ ID NO:1, 3, or 5, or a sequence which hybridizes thereto with the proviso that the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

17. (New) The enzyme according to claim 9, wherein said Trp at position 251 is substituted with Leu or Ser.

18. (New) An enzyme capable of hydrolyzing at least one organophosphate selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the enzyme being produced by a cell transformed with a DNA molecule encoding a polypeptide having the amino acid sequence of RM-8Con shown in Fig. 1 or the amino acid sequence of Md α E7 shown in Fig. 3 in which Trp at position 251 is replaced with Ser.

19. (New) The method according to claim 10, wherein said DNA molecule has at least 80% homology with the DNA encoding LcαE7.

20. (New) The method according to claim 10, wherein said DNA molecule has at least 95% homology with the DNA encoding LcαE7.

21. (New) The method according to claim 10, wherein said DNA molecule has the nucleotide sequence of SEQ ID NO:1, 3, or 5, or a sequence which hybridizes thereto with the proviso that the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

22. (New) The method according to claim 10, wherein said Trp at position 251 is substituted with Leu or Ser.

23. (New) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with an enzyme encoded by a DNA molecule encoding a polypeptide having the amino acid sequence of RM-8Con shown in Fig. 1 or the amino acid sequence of MdαE7 shown in Fig. 3 in which Trp at position 251 is replaced with Ser.

24. (New) The method according to claim 11, wherein said cell is a prokaryotic cell or an insect cell.

25. (New) The method according to claim 11, wherein said DNA molecule has at least 80% homology with the DNA encoding LcαE7.

26. (New) The method according to claim 11, wherein said DNA molecule has at least 95% homology with the DNA encoding LcαE7.

27. (New) The method according to claim 11, wherein said DNA molecule has the nucleotide sequence of SEQ ID NO:1, 3, or 5, or a sequence which hybridizes thereto with the proviso that the protein encoded by the DNA molecule differs from E3 at least in the substitution of Trp at position 251 with an amino acid selected from the group consisting of Leu, Ser, Ala, Ile, Val, Thr, Cys, Met and Gly.

28. (New) The method according to claim 11, wherein said Trp at position 251 is substituted with Leu or Ser.

29. (New) A method of eliminating or reducing the concentration of organophosphate pesticide residues in a contaminated sample or substance in which the organophosphate is selected from the group consisting of carboxylester organophosphates and dimethyl-oxon organophosphates, the method comprising contacting the sample or substance with a cell transformed with a DNA molecule encoding a polypeptide having the amino acid sequence of RM-8Con shown in Fig. 1 or the amino acid sequence of MdαE7 shown in Fig. 3 in which Trp at position 251 is replaced with Ser.